

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Original) A method for determining whether a physical variable in a computer system is anomalously changing, wherein values of the physical variable are reported as quantized values, the method comprising:

~~updating~~ calculating a current frequency of occurrences of a particular quantized value of the physical variable in response to an occurrence of the particular quantized value, wherein the physical variable is measured by a physical sensor in the computer system;

~~determining whether~~ performing a Sequential Probability Ratio Test (SPRT) using the current frequency is statistically different than and a reference mean frequency of the particular quantized value to obtain a SPRT value; and

~~selectively issuing an indication that~~ alarm to a user of the computer system when the SPRT value indicates that the physical variable is anomalously changing ~~dependent on the determining.~~

2. (Currently Amended) The method of claim 1, further comprising:

determining the reference mean frequency, comprising:

prior to ~~updating~~ calculating the current frequency:

sampling a plurality of quantized values of the physical variable,

calculating a mean frequency of occurrences of the particular quantized value in the plurality of quantized values, and

storing the mean frequency as the reference mean frequency.

3. (Cancelled)

4. (Currently Amended) The method of claim 1, wherein ~~determining whether the current frequency is statistically different than a reference mean frequency~~ performing the SPRT comprises:

statistically comparing the current frequency to an alternate mean frequency, wherein the alternate mean frequency is a mean frequency of ~~a distribution of frequencies of~~

the particular quantized value indicative of the ~~signal~~ physical variable anomalously changing.

5. (Currently Amended) The method of claim 1, wherein ~~determining whether the current frequency is statistically different than the reference mean frequency~~ performing the SPRT comprises:

calculating a test value, the test value being equal to

$$SPRT(i-1) + \left[\frac{(x_i - M_0)^2}{2\sigma^2} - \frac{(x_i - M_1)^2}{2\sigma^2} \right], \text{ wherein } SPRT(i-1) \text{ represents a}$$

previously calculated test value, wherein x_i represents the current frequency, wherein M_0 represents the reference mean frequency, wherein M_1 represents an alternate mean frequency, and wherein σ^2 represents a variance associated with the reference mean frequency.

6. (Original) The method of claim 5, wherein the alternate mean frequency is equal to the reference mean frequency \pm a predetermined value.
7. (Original) The method of claim 6, wherein the predetermined value is a predetermined percentage of the reference mean frequency.
8. (Original) The method of claim 5, wherein the alternate mean frequency is dependent on the variance.
9. (Original) The method of claim 5, further comprising:
comparing the calculated test value to a constant value, wherein the constant value is determined based on a selected error tolerance.

10. (Original) The method of claim 9, further comprising:

calculating the constant value, the constant value being equal to $\ln\left(\frac{\beta}{1-\alpha}\right)$, wherein α is a first error tolerance value, and wherein β is a second error tolerance value.

11. (Original) The method of claim 9, further comprising:

calculating the constant value, the constant value being equal to $\ln\left(\frac{1-\beta}{1-\alpha}\right)$, wherein α is a first error tolerance value, and wherein β is a second error tolerance value.

12. (Currently Amended) The method of claim 1, further comprising:

~~dependent on selectively issuing the indication, determining~~ calculating an index that represents how significantly the physical variable is anomalously changing.

13. (Currently Amended) A method for determining ~~a change in a signal that is measured by quantization~~ whether a physical variable in a computer system is anomalously changing, comprising:

in a first stage:

sampling a first plurality of quantized values of the physical variable, wherein the physical variable is measured by a physical sensor in the computer system,
and
~~updating~~ calculating a frequency of occurrences for each different quantized value in the first plurality of quantized values;

in a second stage:

sampling a second plurality of quantized values of the physical variable,
updating ~~[[a]]~~ the frequency of occurrences ~~for each different quantized value in~~
based on the second plurality of quantized values, and
~~continuously updating and storing~~ calculating a reference mean frequency and a reference variance for each different quantized value in the second plurality of quantized values; and

in a third stage:

sampling a third plurality of quantized values of the physical variable,
~~determining~~ calculating a current frequency of occurrences of a particular quantized value selected from the third plurality of quantized values in response to sampling the particular quantized value ~~in the third plurality of quantized values,~~

~~comparing~~ performing a Sequential Probability Ratio Test (SPRT) using the
current frequency ~~[[to]]~~ and the reference mean frequency of the particular
quantized value ~~determined in the second stage~~ to obtain a SPRT value,
and
~~selectively indicating~~ issuing an alarm to a user of the computer system when the
SPRT value indicates that the signal physical variable is anomalously
changing dependent on the comparing.

14. (Cancelled)

15. (Currently Amended) The method of claim 13, wherein ~~comparing the current frequency to the reference mean frequency~~ performing the SPRT comprises:

calculating a test value, the test value being equal to

$$SPRT(i-1) + \left[\frac{(x_i - M_0)^2}{2\sigma^2} - \frac{(x_i - M_1)^2}{2\sigma^2} \right], \text{ wherein } SPRT(i-1) \text{ represents a}$$

previously calculated test value, wherein x_i represents the current frequency,
wherein M_0 represents the reference mean frequency, wherein M_1 represents an
alternate mean frequency, and wherein σ^2 represents the reference variance.

16. (Currently Amended) The method of claim 15, wherein the alternate mean frequency is a
mean frequency of ~~a distribution of frequencies considered to be~~ the particular quantized
value indicative of the ~~signal~~ physical variable anomalously changing.

17. (Original) The method of claim 15, further comprising:

comparing the calculated test value to a value calculated based on a predetermined error
tolerance.

18. (Currently Amended) A computer-readable medium having recorded therein instructions
executable by processing, the instructions to:

sample a first plurality of quantized values representing analog values of a physical
variable in a computing system, wherein the physical variable is measured by a
physical sensor in the computing system;

~~update~~ record a frequency of occurrences for each different quantized value in the first plurality of quantized values;

calculate a reference mean frequency for each different quantized value in the first plurality of quantized values based on the frequency of occurrences;

sample a second plurality of quantized values representing analog values of the physical variable;

calculate a current frequency of occurrences for each different quantized value in the second plurality of quantized values; [[and]]

~~determine whether~~ perform a Sequential Probability Ratio Test (SPRT) using the current frequency for at least one different quantized value in the second plurality of quantized values is statistically different than and the reference mean frequency of the at least one different quantized value to obtain a SPRT value; and

issue an alarm to a user of the computing system when the SPRT value indicates that the physical variable is anomalously changing.

19. (Cancelled)

20. (Original) A computing system, comprising:

a physical sensor arranged to:

monitor a physical variable of the computing system, and

~~the sensor further arranged to~~ output quantized values representative of actual values of the physical variable; and

an integrated circuit arranged to process instructions for:

recording a reference mean frequency of occurrences of a particular quantized value generated from the physical sensor,

~~updating~~ calculating a current frequency of occurrences for ~~each different the~~ particular quantized value generated from the physical sensor,

~~comparing~~ performing a Sequential Probability Ratio Test (SPRT) using the current frequency of [[a]] the particular quantized value [[to a]] and the reference mean frequency of the particular quantized value to obtain a SPRT value, and

~~indicating~~ issuing an alarm to a user of the computing system when the SPRT value indicates that the physical variable is anomalously changing dependent on the comparing.

21. (Currently Amended) The computing system of claim 20, wherein the physical sensor comprises an analog-to-digital converter.

22. (Cancelled)

23. (Currently Amended) The computing system of claim 20, wherein ~~[[the]] instructions for comparing the current frequency of the particular quantized value to the reference mean frequency of the particular quantized value performing the SPRT~~ comprises instructions ~~[[to]]~~ for:

calculating a test value, the test value being equal to

$$SPRT(i-1) + \left[\frac{(x_i - M_0)^2}{2\sigma^2} - \frac{(x_i - M_1)^2}{2\sigma^2} \right], \text{ wherein } SPRT(i-1) \text{ represents a}$$

previously calculated test value, wherein x_i represents the current frequency, wherein M_0 represents the reference mean frequency, wherein M_1 represents an alternate mean frequency, and wherein σ^2 represents a variance associated with the reference mean frequency.

24. (Original) The computing system of claim 20, wherein the computing system is a server.

25. (Currently Amended) A technique for ~~detecting changes in a signal measured by quantization~~ determining whether a physical variable in a computer system is anomalously changing, comprising:

sampling a first plurality of quantized values of the ~~signal~~ physical variable for a first predetermined amount of time, wherein the physical variable is measured by a physical sensor in the computer system;

calculating a frequency of occurrences of ~~at least one different~~ a particular quantized value in the first plurality of quantized values ~~in response to every occurrence of the at least one different quantized value in the first plurality of quantized values;~~

~~updating recording~~ a reference mean frequency of the ~~at least one different particular~~ quantized value ~~in response to every occurrence of the at least one different~~ quantized value in the first plurality of quantized values based on the frequency of occurrences;

sampling a second plurality of quantized values of the physical variable;

calculating a current frequency of occurrences of the ~~at least one different particular~~ quantized value in the second plurality of quantized values ~~in response to an occurrence of the at least one different quantized value in the second plurality of~~ quantized values;

~~determining whether~~ performing a Sequential Probability Ratio Test (SPRT) using the current frequency ~~is statistically different than~~ and the reference mean frequency to obtain a SPRT value; and

~~selectively~~ issuing an ~~indication~~ alarm to a user of the computer system when the SPRT value indicates that the ~~signal~~ physical variable is anomalously changing ~~dependent on the determining~~.

26. (Currently Amended) The technique of claim 25, further comprising:

sampling a third plurality of quantized values for a second predetermined amount of time prior to sampling the first plurality of quantized values.

27. (Original) The technique of claim 25, wherein sampling the second plurality of quantized values occurs for a second predetermined amount of time.

28. (Cancelled)

29. (Cancelled)

30. (New) The method of claim 1, wherein the physical variable comprises at least one selected from the group consisting of a voltage, a temperature, and a current.

31. (New) The method of claim 13, wherein the physical variable comprises at least one selected from the group consisting of a voltage, a temperature, and a current.

32. (New) The computer-readable medium of claim 18, wherein the physical variable comprises at least one selected from the group consisting of a voltage, a temperature, and a current.
33. (New) The computing system of claim 20, wherein the physical variable comprises at least one selected from the group consisting of a voltage, a temperature, and a current.
34. (New) The technique of claim 25, wherein the physical variable comprises at least one selected from the group consisting of a voltage, a temperature, and a current.